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# Bankers' remuneration reforms and future challenges

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## Abstract

The desire to structure the remuneration of top banking executives and other material risk takers (MRTs), particularly the elements that are risk sensitive and aligned with long-term incentives of their institutions, is at the centre of the regulatory debate. This discussion is part of the wider debate on the creation of cross-country banking regulation that is aimed at reducing systemic risk in the banking industry whilst maintaining its competitive and innovative elements. Following the introduction of the Capital Requirements Directives (CRD) III and IV the academic literature has shed some light on the benefits and costs of restrictions on variable pay, malus and clawbacks, and group behaviour of MRTs. Yet, we are still far from understanding the real costs and benefits of these reforms and the forthcoming CRD V, and how these will support the demands of fintech transformation of the banking industry and the need to promote sustainable finance.

**Key words:** banking, remuneration, fintech, climate change risk, sustainability, regulation

**JEL classification:** G20, G28, G38, G01, G39

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## **1. Introduction**

Immediately following the financial crisis, the remuneration of top executives at banks and other systemically important financial institutions attracted a lot of attention. At that time, the scale and structure of remuneration was commonly perceived as one of the main causes of excessive risk taking by banks and one of the causes of the financial crisis. In addition, the level of remuneration was considered to be a symbol of extreme greed and recklessness. There are many reasons why the interest in bankers' remuneration has not subsided in the period since the financial crisis.

First, the financial crisis has left a long-lasting mark on world economic development and stability. This has raised awareness amongst academics, policy makers and the general public of the potential consequences of inappropriate remuneration incentives.

Second, the spate of banking reforms (including new remuneration regulation) have created an imperative to better understand their effectiveness in curbing risk taking, reducing systemic risk and stabilising the banking industry. In particular, it is not clear what the effects of individual policies are; do they complement each other, substitute each other, or undo each other.

Third, despite the restrictions that have been placed on the components of remuneration, the level of total remuneration in banks has remained high. According to Reuters, in 2015 four of the biggest European banks (HSBC, Deutsche Bank, Standard Chartered and Barclays) alone had 1,740 material risk takers (MRTs) earning compensation packages in excess of €1 million.<sup>2</sup> According to the European Banking Authority (EBA, 2019a), in the same year across the EU, the number of bankers on compensation packages of €1 million or higher hit 5,142. In the UK

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<sup>2</sup> <https://www.marketscreener.com/BARCLAYS-PLC-9583556/news/Number-of-newly-minted-millionaires-at-Europe-s-big-banks-is-shrinking-24101817/>

alone, there were 3,567 bankers earning more than €1m, and together their remuneration amounted to €10bn. (EBA, 2019a).

Fourth, the rapid development and implementation of technological innovation, ‘fintech’, married with insufficient regulation of fintech products, services and, indeed, of this whole new branch of the financial industry, has created an urgent need to expand our knowledge of the specifics of fintech and its adoption by the sector. The current regulation of fintech markets and entities is not well designed to mitigate the risks that may emerge from the adoption of fintech, hence is not necessarily aligned with maintaining appropriate executive incentives. Moreover, since greater competition and greater adoption of fintech make existing regulation (e.g. capital requirements) less effective, the role of remuneration structures can play in restricting risk taking may become more important. Finally, climate change imposes new challenges throughout the financial industry, including banks. It is not clear how sustainability, environmental, social and governance (ESG) issues have been adopted by banks and whether there are linkages between remuneration and the adoption of sustainable policies and strategies.

Some of the issues listed above have already been debated in the finance literature, but others have not. This review builds up on Zalewska (2016) and assesses the current state of the academic research that has developed in response to the regulatory changes in remuneration policies and practices following the introduction of the Basel II and Capital Requirement Directive (CRD) III. It also discusses some important gaps in the literature that have emerged in the light of regulatory and market changes.

## **2. Regulatory developments**

Prior to the 2008 financial crisis bankers’ remuneration was commonly perceived as part of internal policies of banks and was only subject to the general rules of good corporate

governance practices.<sup>3</sup> In the aftermath of the 2008 financial crisis, the remuneration practices of banks became the subject of increasing regulatory attention and led to efforts aimed at structuring remuneration in a way that would curb excessive risk taking, and prevent the practice of reward without performance. In addition, given the high interconnectivity of banks, the policies taken within the EU aimed to synchronise remuneration practices across banks and countries. This swing from ‘governing’ to ‘designing’ remuneration has led to numerous regulatory rules and directives. These reached far into the standard domain of executive boards and remuneration committees, reducing their freedom to align the remuneration of executives with shareholder preferences. At the same time, shareholders have been given more voice and are required to vote on remuneration packages of executives at least every three years.

Furthermore, regulatory intervention has not stopped at the executive level. The remuneration rules and directives have been designed to apply to all “categories of staff whose professional activities have a material impact on their risk profile, remuneration policies and practices that are consistent with effective risk management”<sup>4</sup>, i.e. MRTs. Thus, the issue of designing remuneration has been significantly widened from a relatively small group of executives and boards to a much larger group that may never have attended a single board meeting and/or participated in any bank-wide strategic decision-making. In 2018, Deutsche Bank reported that their MRT group consisted of 45 management board members and of 1,868 other MRTs.<sup>5</sup> The same year, BNP Paribas reported that they had just two executive corporate officers and 1,429 other MRTs.<sup>6</sup>

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<sup>3</sup> For instance, according to UK Combine Code of Corporate Governance 2006 “Levels of remuneration should be sufficient to attract, retain and motivate directors of the quality required to run the company successfully, but a company should avoid paying more than is necessary for this purpose. A significant proportion of executive directors’ remuneration should be structured so as to link rewards to corporate and individual performance”.

<sup>4</sup> CDR III recital 3; CDR Annex I, section 11, para 23

<sup>5</sup> [https://www.db.com/ir/en/download/Deutsche\\_Bank\\_Compensation\\_Report\\_2018.pdf](https://www.db.com/ir/en/download/Deutsche_Bank_Compensation_Report_2018.pdf). This is a considerable drop from the figures reported before the reorganisation in 2016. For instance, in 2014 the Deutsche Bank reported 139 senior managers and 2,764 other MRTs (<https://annualreport.deutsche-bank.com/2014/ar/management-report/compensation-report/material-risk-takers.html>)

<sup>6</sup> [https://invest.bnpparibas.com/sites/default/files/documents/bnpp\\_2018\\_remuneration\\_report.pdf](https://invest.bnpparibas.com/sites/default/files/documents/bnpp_2018_remuneration_report.pdf)

Remuneration directives, and the positions they apply to, have been structured through official directives issued by the European Parliament and the Council. The Capital Requirements Directive (CRD) III, published in November 2010, was the first milestone in the process and the gate through which Basel II was implemented within the EU. It is recognised that remuneration and risk taken by individuals and institutions must be linked. In the attempt to reduce risk taking, CRD III specifies that fixed and variable components of total remuneration have to be appropriately balanced and that the fixed component should represent a sufficiently high proportion of the total remuneration “to allow the operation of a fully flexible policy, on variable remuneration components, including the possibility to pay no variable remuneration component”. However, setting the appropriate ratios between the fixed and the variable components of total remuneration was left to individual institutions for as long as:

*“a substantial portion, and in any event at least 50 %, of any variable remuneration shall consist of an appropriate balance of:*

*(i) shares or equivalent ownership interests, subject to the legal structure of the credit institution concerned or share-linked instruments or equivalent non-cash instruments, in case of a non-listed credit institution, and*

*(ii) where appropriate, other instruments within the meaning of Article 66(1a)(a), that adequately reflect the credit quality of the credit institution as a going concern” (CRD III, Annex I).*

Although individual institutions were given a degree of flexibility to design their pay retention policies to align remuneration incentives with long-term interest of institutions, CRD III specified that “a substantial portion, and in any event at least 40%, of the variable remuneration component is deferred over a period which is not less than three to 5 years and is correctly aligned with the nature of the business, its risks and the activities of the member of staff in question” (CRD III, Annex I). Moreover, malus and clawback arrangements were

postulated when “subdued or negative financial performance of the credit institution occurs” (CRD III, Annex I). In the case of an employee leaving before reaching retirement or on his/her retirement, discretionary pension benefits would be deferred for five years.

As CRD III was in the form of a directive, considerable differences occurred in how CRD III was interpreted and implemented by individual countries within the EU. Consequently, the implementation of the directives depended heavily on a country’s regulatory and supervisory bodies, their ability to identify and then accordingly adjust remuneration policies to correct for excessive risk taking.

CRD IV was published in 2013 to reduce the differences in the implementation of CRD III, and to facilitate the implementation of Basel III. In contrast to CRD III, CRD IV was a set of regulations, not just a set of directives. Building on CRD III, CRD IV, introduced tighter rules for financial institutions, including rules on remuneration.

For instance, according to CRD IV the variable component should not exceed 100 per cent of the fixed component of the total remuneration for each employee, even though setting the exact ratios was still in the hands of individual institutions. Ratios lower than 100 per cent could be set by individual countries, but if the ratios were to be increased this required approval from shareholders or owners of the institutions. Furthermore, the higher ratio was capped at 200 per cent.

CRD IV maintained deferral requirements specified by CRD III, and added that “in the case of a variable remuneration component of a particularly high amount, at least 60 % of the amount shall be deferred” (Art. 94 (m)) and “up to 100 % of the total variable remuneration shall be subject to malus or clawback arrangements” (Art. 94 (n)).

In the case of an early contract termination, the pay would “reflect performance achieved over time and do not reward failure or misconduct” (Art. 94 (h)).

Despite its regulatory nature and the more precise specification of rules, CRD IV was still open to different interpretations. Regulatory authorities in several individual countries issued separate documents that were designed to clarify the rules and help with their adoption (e.g. see FCA, 2016).<sup>7</sup> Critical voices about the CRD IV remuneration rules have also been raised (e.g. see ESMA, 2016; Murphy 2013; Johnston, 2014).

In December 2015, the European Banking Authority (EBA, 2015a) published a report on the prudential regulation of the investment industry. The report, prepared in collaboration with the European Securities and Market Authority (ESMA), provided an assessment of the existing prudential regulations and practices, and made recommendations for their improvement. Although remuneration is not the main focus of the report, it is noted that the proportionality aspects of the existing regulation require further thought and adjustment. They concluded that there has been insufficient differentiation among large, complex institutions and the smaller, less complex ones.

In June 2016, the EBA launched a review of the effectiveness of CRD IV.<sup>8</sup> The preliminary assessment of CRD IV and the proposed amendments was published in November 2016. The review showed that there were still considerable differences in the interpretation and application of CRD IV by individual countries. The review also showed that smaller and less complex financial institutions were negatively affected by some remuneration and deferral rules imposed by CRD IV, and that some of these rules were ‘not workable’ (EBA, 2016a). In particular, in relation to deferral and pay in equity-linked compensation as specified in CRD IV, the report concluded that “the cost of applying these requirements exceeds their prudential

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<sup>7</sup> In 2015, the European Banking Authority issued their own guidance on remuneration practices <https://eba.europa.eu/sites/default/documents/files/documents/10180/1314839/1b0f3f99-f913-461a-b3e9-fa0064b1946b/EBA-GL-2015-22%20Final%20report%20on%20Guidelines%20on%20Sound%20Remuneration%20Policies.pdf>

<sup>8</sup> <https://eba.europa.eu/regulation-and-policy/transparency-and-pillar-3/guidelines-on-disclosure-requirements-under-part-eight-of-regulation-eu->



benefits in the case of staff with low levels of variable remuneration, since such levels of variable remuneration produce little or no incentive for staff to take excessive risk” (EBA, 2016).

The CRD V regulations were published in May 2019. They specify several amendments to CRD IV that will apply from 28 December 2020. CRD V softens some remuneration rules but tightens others. For instance, CRD V states that institutions with average asset value not exceeding €5 billion over the four-year period immediately preceding a given financial year are exempt from the application of payment in instruments, retention, and deferral specified in CRD IV.<sup>9</sup> The exceptions also apply to employees whose annual variable remuneration does not exceed €50,000 or represent more than one third of their total annual remuneration.<sup>10</sup>

While the reporting and remuneration setting regulations have been relaxed for smaller institutions, large institutions face a tightening of several regulatory rules. For instance, CRD V increases the minimum bound of the deferral period from three years to four for senior managers in big and complex financial institutions.

## 2.1. Remuneration trends

Remuneration in banks has been, and remains, at a high level even though its structure has changed and is in line with the Principles and Standards of Sound Compensation issued by the Financial Stability Board in 2011 (Cerasi et al., 2020). The levels of banking remuneration appear to show low sensitivity to shocks (Axelson and Bond, 2015) and are higher than in other sectors even after controlling for differences in individual characteristics (Philippon and Reshef, 2012). Even though the 2008 financial crisis had tremendous impact on banks profitability and exposed numerous irregularities, Bell and Van Reenen (2014) show that in

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<sup>9</sup> Individual countries can increase this threshold to €15 billion.

<sup>10</sup> Individual countries may not wish to apply the exemption.

2010, i.e. when many banks were still in ‘intensive care’, the average compensation for 1,408 of the UK senior bankers was £1,905,000. According to Reuters, in 2015, four of the biggest European banks (HSBC, Deutsche Bank, Standard Chartered and Barclays) had 1,740 MRTs earning compensation packages in excess of €1 million.<sup>11</sup> In the same year, according to the EBA, the number of high earners in banking across the EU reached 5,142. In the UK alone 3,567 bankers earned more than €1m each in 2017, and their combined earnings reached nearly €10 billion (EBA, 2019a). Figure 1 illustrates how the number of bankers earning at least €1million a year changed since the introduction of CRD III (the pale blue bars, the left-hand axis), i.e. since the requirement to report remuneration of high earners was imposed. Between 2010–2013 the numbers of high earners remained below 3,500. However, since 2014, the year CRD IV was introduced, the numbers of high earners have risen. A big jump is clearly observed in 2015. The 2015 statistics are 33% higher than in 2014 and 61.8% higher than in 2013. Although the appreciation of the pound sterling against the Euro may have had some positive impact on the number of UK bankers (a significant proportion of EU high earners) with million-plus remuneration packages in these years, it is unlikely that the exchange rate change is the sole explanation of the increase in the number of high earners.<sup>12</sup>

As the number of high earners increased, so too have the number of MRTs. Figure 1 shows that the increase in the number of staff recognised as MRTs increased from 1,875 in 2013 to 3,350 in 2014 (or 78.7%), and to 4,408 in 2015 (a further 31.6%). In total, the number of MRTs increased by 135% between 2013 and 2015.

The increase in the proportion of high earners being classified as MRTs is depicted by the (red) continuous line in Figure 1 (the right-hand axis). The big change in the ratio is clearly visible in 2014 when it jumps by 27.7% in comparison with 2013. The change in the ratio can

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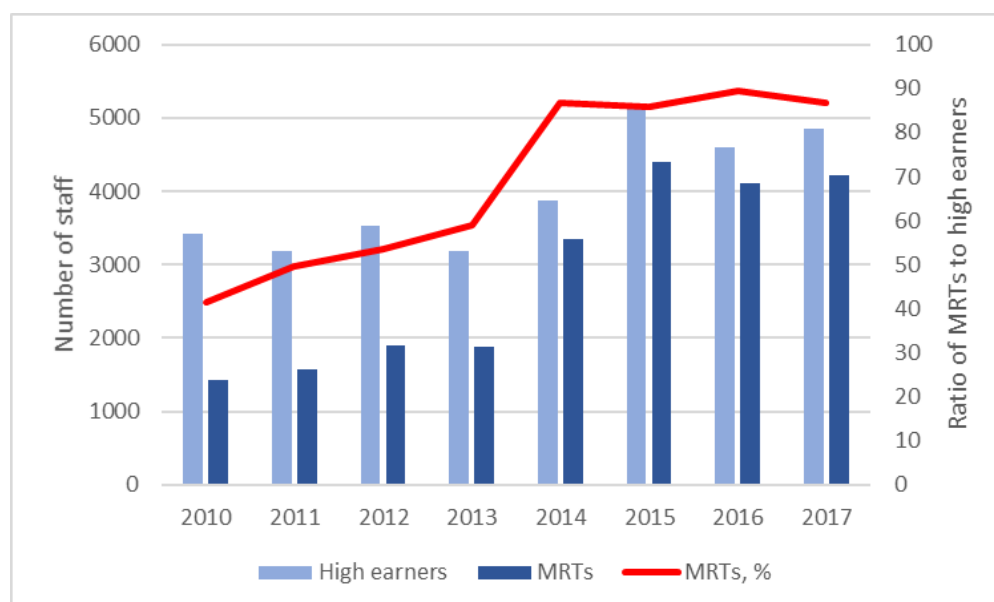
<sup>11</sup> <https://www.marketscreener.com/BARCLAYS-PLC-9583556/news/Number-of-newly-minted-millionaires-at-Europe-s-big-banks-is-shrinking-24101817/>

<sup>12</sup> Pound sterling appreciated by 5 per cent between 31 December 2014 and the 31 December 2015, and 13 per cent between 31 December 2013 and 31 December 2015.

be at least partly attributed to the introduction of CRD IV, and that more high earners became classified as having material impact on the risk profile of the bank that employs them. Yet it is interesting that the tightening of the regulatory rules (defining who is and who is not an MRT) coincides with the increase in number of high earners. It could be fully expected that CRD IV would have a positive impact on the number of MRTs and the increase in the ratio of MRTs to high earners. However, it is less obvious why it would increase the number of high earners – unless the fact that being classified as an MRT pushes remuneration up.

It would be interesting to know whether the introduction of CRD IV resulted in a change in the size and structure of remuneration of those who (i) were already classified as MRTs following the introduction of the CRD III, (ii) became MRTs after the introduction of the CRD IV and (iii) have not been classified as MRTs before or after the introduction of CRD IV.

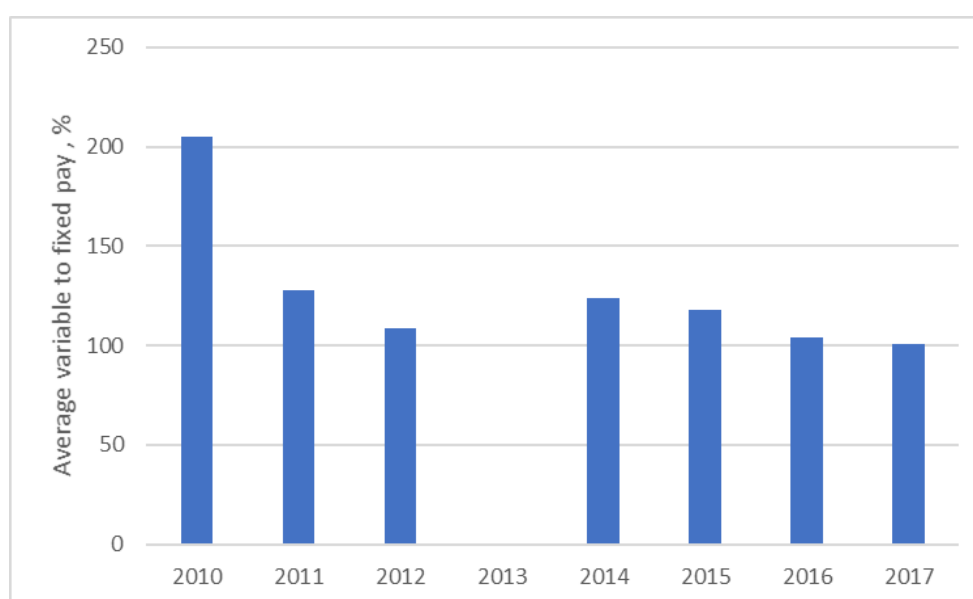
Figure 1. The number of bankers earning at least €1million (high earners) a year, and the proportion of material risk takers (MRTs) among these high earners.



Source: EBA annual reports on high earners (2014, 2015b, 2016b, 2019a)

Given that one of the aims of the regulatory changes was to achieve a reduction in the ‘bonus culture’, it is important to look how the proportion of variable pay changed in comparison to fixed pay. Figure 2 shows that at the time of the introduction of CRD III, the average ratio of variable pay to fixed pay was two to one (the averages were taken across countries and across different job categories). This ratio has declined considerably over time following the introduction of CRD III in 2010 (compatible statistics for 2013 are not available), but variable pay remained larger than fixed pay until 2016. 2017 is the first year from which average variable pay has not exceeded fixed pay.

Figure 2. Average ratio of variable to fix pay, 2010–2017.



Source: EBA annual reports on high earners (2014, 2015b, 2016b, 2019a)

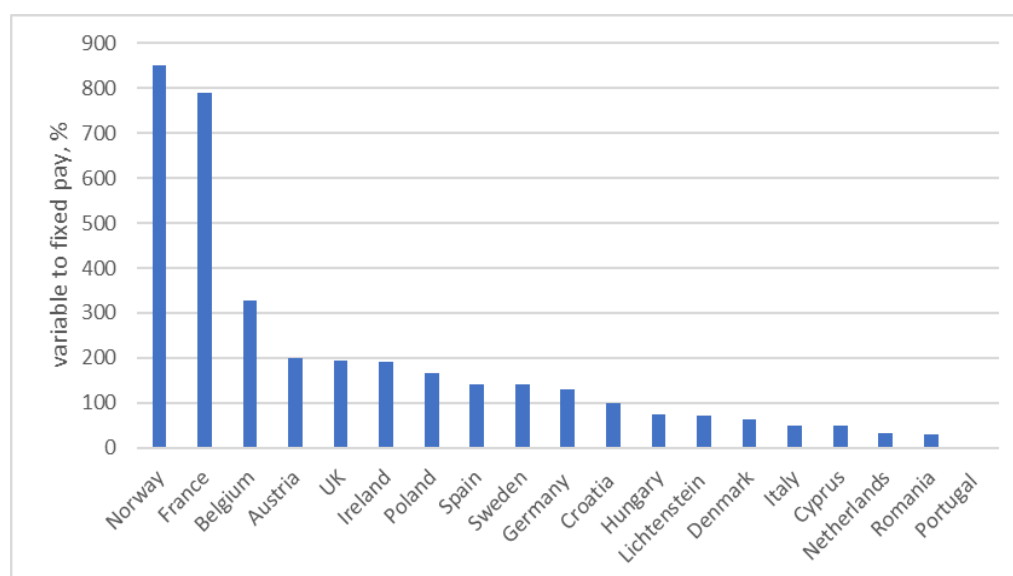
However, taking averages across countries and across various jobs categories can be misleading. To complement the picture, Figure 3 shows the ratio of variable to fixed pay for the highest earning group in each country in 2017. It is not always the case that the highest earning group has the highest ratio of variable to fixed pay, but looking at the highest earning

group gives some indication of the scale of the ratio for those employees that are likely to be at the top of the executive ladder, and determining the risk taking profile of their institution.

Figure 3 shows that in many countries (predominantly, the relatively smaller ones) the highest paid MRTs have variable pay that is lower than fixed pay. There is also a group of countries where variable pay is greater than fixed pay but does not exceed the ratio specified by CRD IV. However, in France the highest paid person received nearly eight times as much in variable pay than they received as fixed remuneration in 2017. Interestingly, this is not the highest ratio in France. The two lower categories of high-earners had ratios of variable to fixed pay equal to 656% and 1,075% respectively. The Belgian statistic is less dramatic, but still much higher than the regulatory upper limit of the variable to fixed pay.

The highest ratio of variable to fixed pay for the highest-earning category is recorded for Norway. Since Norway is not part of the EU it does not have to adopt CRD IV; hence the high ratio does not break the EU remuneration regulations.

Figure 3. The variable to fixed pay ratio (in per cent) as of 2017 for the highest pay category of MRTs per country.



Source: EBA Report on High Earner (2019a)

### **3. Does executive remuneration affect risk taking?**

#### **3.1. Characteristics and effectiveness of individual remuneration components**

There is a long-standing academic debate about whether remuneration, either in its form or size, impacts on performance. While the evidence that exists for non-financial firms on the links between remuneration and firm performance is mixed and reveals complex patterns, finding an answer in the case of financial institutions seems even more challenging. The assessment of financial performance is never complete if it does not account for associated risks. In the case of financial institutions (for convenience I will refer to them as banks), accounting for risk is particularly important. This is due to the potential difficulties in assessing a bank's risks, and because the failure of a single bank may have systemic effects on the banking sector, and consequently the economy. Hence, in the case of banks, the debate on the existence of a remuneration-performance relationship has tended to focus on the relationship between remuneration and risk taking.

The question of how executive pay affects risk taking lies at the heart of the discussion about bankers' remuneration. Cheng et al. (2015) argue that the association between executive pay and risk taking arises because riskier firms have to pay higher remuneration than less risky firms to compensate risk-averse executives, not because higher remuneration induces higher risk taking. The argument that risk averse executives prefer to work for less risky firms (all else being equal), unless they are compensated for bearing the additional risk that is associated with working for a riskier firm seems logical and consistent with the basic risk-return relationship driving financial decisions.<sup>13</sup> Yet when it comes to financial institutions, it is not entirely convincing that riskier banks (having higher betas, volatility and leverage) present greater risk for their executives. In fact, paradoxically, if banks are large enough then higher market or

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<sup>13</sup> Grout and Zalewska (2012) show that, even when CEOs are risk-neutral, when special skills are needed and are rare, it may be optimal for shareholders to remunerate a CEO with many options, as high incentives are needed when high skills are needed. This will result in highly-skilled CEOs' remuneration being much larger than the remuneration fixed by the market for an average CEO.

operational risks may not be associated with the need for higher executive compensation. If banks are ‘too-big-to-fail’, explicit or implicit governmental guarantees reduce the risk that executives in non-financial firms would otherwise face. Furthermore, the argument that bankers may need incentives that are similar to other risk-averse investors may not be entirely correct. Coats and Herbert (2008) and Stanton et al. (2011) document that higher levels of testosterone increase risk taking. Sapienza et al. (2009) show that the Chicago MBAs with the highest testosterone levels (and hence, the lowest risk aversion) selected careers in the financial sector. Thus, if banking executives are indeed less risk averse than other groups of executives, they may not need to be compensated more for taking higher risks.

Regarding risk taking, it is important how executives are paid, not just how much. The composition of remuneration is not neutral with regard to risk taking. If remuneration structure aims to increase executives’ alignment with shareholders, then the remuneration package typically includes options and/or shares. Yet, even if executives hold shares in their own companies, it is unlikely that they maximise the same utility function when making decisions as their shareholders do. Differences in risk aversion between well-diversified shareholders and executives whose current income and reputation (hence, future income too) hinge on the companies’ performance are believed to result in sub-optimal decisions, from the shareholders’ perspective, and less risk taking than shareholders would prefer. Options are often introduced to executive remuneration packages to reduce the effect of executives’ risk-aversion while maintaining shareholder alignment. Options, given their asymmetric payoffs, reward good performance but do not penalise for poor performance. This asymmetry of payoffs causes the value of the options to increase with risk taken.

Bonuses, another common remuneration component, may not be a direct reflection of share prices but, if their size and conditions of payment are linked to performance, they may induce risk taking. For instance, when performance is below the threshold that determines the

bonus payment, then the bonus provides an incentive to increase risk and therefore the probability of the bonus being paid.

In the specific case of banks, where there is a material possibility that in times of distress a regulator or a government will step in and bail out a bank to avoid a bank run and financial instability, incentives to take more risk are even more pronounced. If a single bank becomes financially distressed, a regulator may let it fail to ‘teach others a lesson’. However, if all banks get financially distressed, a regulator has a little choice but to rescue them to protect the economy. This moral hazard problem further adds to the difficulty of structuring remuneration incentives, as no individual bank has an incentive to deviate from the rest.

Many papers document that bank CEOs’ equity-based compensation (incentives designed to maximize shareholder value) tends to induce excessive risk taking. Bolton et al. (2015) show that when the chosen level of risk is not observable to bondholders, shareholders will always choose risk that is higher than optimal (assuming that the rational expectation equilibrium exists). There are plenty of studies that confirm the existence of a positive relationship between equity-linked compensation and risk taking (e.g. Balachandran et al., 2011; Adams, 2012; DeYoung et al., 2013; Gande and Kalpathy, 2017; Kolm et al., 2017; Boyallian and Ruiz-Verdú, 2018; Sun, 2018; Kolasinski and Yang, 2018).

However, it is not just equity-linked compensation and bonuses that are associated with higher levels of risk taking. Brown et al. (2015) document that severance pay is positively associated with risk-shifting, too. Brown et al. (2015) show that shareholders of financial firms that included severance pay in their CEOs’ remuneration packages experienced heavier losses in 1997–2007 than shareholders who did not grant such contracts, suggesting that severance pay may induce excessive risk taking.

Excessive risk taking induced by CEOs’ equity incentives may be so severe that it results in insolvency (e.g. Gande and Kalpathy, 2017). Balachandran et. al. (2011) confirm that



equity-based compensation is associated with a higher probability of default, but they also find that cash bonuses decrease default probability. This is in contrast to Hakenes and Schabel (2014) who argue that risk-shifting behaviour and bonus increases may be endogenous, i.e. bonuses grow with an increase in the probability of a bailout, but an increase in bailout leads to even more risk taking.

In the search for optimal remuneration structures, from a stakeholder as well as a shareholder perspective, several theoretical models have been put forward. The main idea behind these models is to analyse how a reduction in the alignment of shareholders' and managerial incentives affects risk taking, and how to achieve the reduction of this alignment. Eufinger and Gill (2017) argue that if banks remunerate in a 'conservative' way, i.e. they adopt a pay package that consists of a relatively high fixed payment and a relatively low performance-based wage component, then they should be allowed to take on more leverage as conservative remuneration structures are less likely to result in excessive risk taking. They take their argument one step further and argue that the form of remuneration structure should be taken into account in setting capital requirement, i.e. the more conservative remuneration structures are adopted, 'the higher the leverage the bank is permitted to take on'.

There are two issues with this conclusion. First, conservative remuneration structures can be a window-dressing policy that has little resemblance with the true risk profile of a bank. Second, the model does not analyse remuneration as a mix of a fixed salary and performance-based reward. The conservative remuneration structure is a mix of a fixed bonus that would not be awarded in a bad state of the world (unless no risky projects were undertaken) and a variable component that depends on the type of project chosen and the state of the world. In contrast, the non-conservative remuneration structure consists of variable pay that depends on the type of the project chosen and the state of the world. Thus, the proposed remuneration is a mix of performance-based bonuses; one fixed in its size, and one directly linked to the return

on the project. Although such a remuneration structure is improbable in the real world (it can be safely assumed that some fixed salary will be expected to be paid regardless of the state of the world), the model shows that limiting the proportion of the remuneration that is return based (share-like component) reduces risk taking, or that risk taking incentives induced by bonuses are lower than risk taking incentives induced by holding equity.

Bannier et al. (2013) constructed a model that illustrates a relationship between competition and bonuses. They argue that when competition for talent increases, bonuses increase, and consequently there is an increase in risk taking. The increase in risk taking can be so large that it will be value destroying for individual banks and even societies. They argue in favour of reducing banking bonuses although point out that “any regulatory restrictions on compensation schemes would have to account for a multitude of different factors” which are not present in their theoretical model.

Thanassoulis (2012) also analyses how restricting the size of variable pay impacts on risk taking. His model is based on remuneration being a mix of a fixed salary and a payment that is related to bank performance (which is a function of a bank’s size). By construction, the variable component resembles equity-linked compensation. Thanassoulis (2012) shows that restricting the variable pay (i.e. the equity-linked component) reduces risk taking. The results are therefore consistent with those of Eufinger and Gill (2017), and with empirical findings which show that restricting the manager–shareholder alignment reduces risk taking.

Thanassoulis (2012) also argues that while capping performance-based remuneration has a negative impact on risk taking and a positive impact on performance, tough restrictions are value-destroying. This conclusion is expected, given that the ‘bonus’ variable in his model is a function of a bank’s size. He also stresses that the level of the cap is bank specific (the cap size depends on the bank size).

Thanassoulis and Tanaka (2018) focus their attention on explicit regulatory features, i.e. malus and clawback (M&C), and their effectiveness in reducing risk taking.<sup>14</sup> Given that the probability of triggering M&C increases with the risk of projects undertaken, it is expected that adoption of M&C will result in lower risk taking. However, as Thanassoulis and Tanaka (2018) notice, M&C are imperfect as they may lead to a rejection of high risk – high return projects that have high social value in favour of less socially beneficial but less risky alternatives. They also point out that the effectiveness of M&C in reducing risk depends on whether options are part of a remuneration package or not. In general, if executives are offered remuneration packages with high curvature of pay and M&C clauses, these M&C clauses may not result in lower risk taking. This again strengthens the argument against aligning shareholders' interests with those of executives. Harris et al. (2017) conduct a lab study to better understand an impact of malus and bonus caps on risk taking. They confirm that non-constrained rewards proportional to performance are most risk taking prone, yet differences between risk taking attitudes diminish when bonuses are conditional on hitting an absolute or relative performance target.<sup>15</sup>

Inside debt is another 'instrument' that is argued to reduce risk-shifting behaviour in banks. Edmans and Liu (2011) argue that linking executive remuneration to inside debt (this is a general rather than bank specific argument) creates more efficient restrictions on risk-shifting than for example using bonuses. This is because, if executive remuneration is linked to inside debt, executives will be both concerned with the probability of bankruptcy and with the value of the assets in bankruptcy. In contrast, if bonuses are used as a risk-shifting prevention tool, the bankruptcy value of the firm does not matter because the bonus will not be paid when a

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<sup>14</sup> Malus refers to an *ex post* claim on an unvested deferred pay, if there is evidence that a manager is responsible for poor risk management, misconduct, etc. Clawback, in contrast, is a claim on a bonus pay that has already vested.

<sup>15</sup> Ilić et al. (2019) document the use of relative performance evaluation in determining CEO pay in a sample of 46 international banks.

firm goes bankrupt. Using a sample of U.S. banks, Bennett et al. (2015) found evidence consistent with Edmans and Liu (2011). They showed that a higher proportion of inside debt holdings by top executives was associated with lower risk taking and better performance during the 2008 financial crisis. Similar conclusions were reached by van Bakkum (2016), and Kolasinski and Yang (2018).

However, Thanassoulis and Tanaka (2018) argue that inside debt may be an inefficient mechanism of reducing risk–shifting when debt markets are informed. When the debt markets observe the risk of repayment of projects chosen by executives, they adjust their expected rate of repayment accordingly. This keeps the net present value of the executive compensation debt component constant, making it independent of the riskiness of executive’s project/risk choices. Thanassoulis and Tanaka (2018) argue that M&C rules and linking pay to interest rates may be more effective than using inside–debt. Moreover, it is not clear whether Edmans and Liu’s (2011) arguments apply to banks that are too–big–to–fail because the probability of bankruptcy for such banks is not merely a function of executives’ risk choices.

In the search for an effective composition of remuneration, Bolton et al. (2015) propose to include credit default swaps (CDSs) in executive compensation to reduce risk taking. They argue that including CDSs in executive remuneration contracts can provide first–best risk incentives, because the CDSs provide a market price for risk. In particular, they state ‘when banks’ performance deteriorates and their credit weakens (...), the banks [that have CDSs included in executive remuneration contracts] will be forced to conserve capital through the automatic adjustment of bonuses’. Whilst it may be true that if CDSs were included in executive remuneration contracts, then they would have ‘create[d] a build–in stabilizer’ during the 2008 financial crisis. It is, however, not clear if they would have offered a mechanism that was strong enough to prevent it.

### 3.2. Factors affecting remuneration

The discussion of linkages between remuneration and risk-taking behaviour would not be complete if it did not take a wider view and attempted to look at factors that may be detrimental to shaping both risk taking and remuneration. Risk bearing is a fundamental characteristic of the banking business and is influenced by many factors that may also directly impact remuneration.

The working of banks is closely related to how they are governed and regulated. When governance is determined, to an extent, by internal processes and structures, and is bank specific, then regulation defines an external ‘intervention’ that is designed to apply to all banks. Regulation in the post-crises era has become more prescriptive in imposing what is ‘appropriate’ and what is ‘unacceptable’. Regulators set remuneration rules applying to banks’ executives, everyone deemed a material risk taker and/or those who have high enough remuneration. Regulation does not define individual remuneration packages and does not determine what strategic and investment decisions individual banks should make. These matters are left to boards and governance.

The importance of governance in shaping the soundness of the banking sector should not be underestimated.<sup>16</sup> For instance, Onali et al. (2016) show that the structure of boards matters. They document that boards with greater monitoring powers increase bank performance, and that government ownership matters. In particular, the presence of government officials on boards is associated with lower payout ratios suggesting that the government, as a shareholder, represents broader stakeholder interests than those of minority shareholders. Słomka–Gołębiowska and Urbanek (2016) show that concentrated ownership plays an important role in

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<sup>16</sup> Fritz–Morgenthal et al. (2016) argue that risk taking culture is an important factor in explaining risk taking and that governance is one of the most significant factors in explaining stress test results.

determining executive remuneration, i.e. higher board independence is associated with lower executive compensation in banks with a controlling shareholder.

Yet, paradoxically, while regulation aims to prevent possible governance failures, there are numerous examples where regulation may weaken governance rather than strengthen it. The Trouble Assets Relief Program (TARP) is one of the most studied examples of unsuccessful regulatory intervention. For instance, Winkelvoss et al. (2014) document that banks that received financial assistance within the TARP, lowered the CEO's pay, and in particular, lowered bonuses and equity-based compensation (i.e. remuneration incentives commonly associated with risk taking). However, this does not infer that the intervention of the U.S. government at the start of the financial crisis resulted in lower risk taking by banks. Black and Hazelwood (2013) report that receiving TARP assistance resulted in greater risk taking by big recipient banks in comparison with banks that did not receive TARP cash injections. They argue that this was the result of banks receiving TARP bailout being "encouraged to make additional loans despite increased borrower risk". Duchin and Sosyura (2014) also argue that the TARP recipient banks initiated riskier loans, but they also document that the banks further increased the risk of their investments by shifting towards riskier securities. Duchin and Sosyura (2014) argue that because the shift in investments happened within the same asset classes, it remained undetected by regulatory capital ratios.

TARP's negative impact is not unique. Hryckiewicz (2014), using a sample of banks from 23 countries, shows that regulatory interventions are associated with an increase in risk taking behaviour by banks. She argues that this is a result of "the withdrawal of governance mechanisms in the post-intervention period, inefficient bank management and/or lack of appropriate restructuring process in the bailed-out banks."

Therefore, there is robust evidence that the 'natural' relationship between risk taking and risk-taking remuneration incentives can be distorted by governmental or regulatory

intervention. Moreover, governmental/regulatory interventions do not necessarily result in a reduction of risk taking, even if risk taking remuneration incentives have declined.

#### **4. Does remuneration of non-executive MRTs matter?**

While historically the literature has mainly focused on executive remuneration, the post financial crisis decade has delivered many papers that inform on issues that are much broader than those directly linked to boardrooms. This is consistent with regulatory developments, and with the fact that regulation of the financial sector reaches far beyond bankers with executive powers.

Although executive powers may be fundamental in setting strategic risk-taking decisions, it is well-understood that they do not have exclusivity when it comes to risk taking. Non-executive MRTs play a fundamental role in how banks operate and perform. Therefore, it is important to understand the incentives that non-executive MRTs are subject to, and how responsive they are to these incentives. Just as the form of remuneration and its quantum sets risk taking incentives for executive, it should be expected that it will also impact on the risk-taking behaviour of other individuals.

It is well recognised that it is not just the executives in the financial sector who are highly remunerated (e.g. Axelson and Bond, 2015; Philippon and Reshef, 2012; Bell and Van Reenen, 2014). High levels of remuneration are associated with many factors, including demand for talent, competition, and general economic conditions (e.g. Thanassoulis, 2012; Axelson and Bond, 2015; Acharya et al., 2016; Glode and Lowery, 2016; Célérier and Vallée 2019).

There is also ample evidence of a positive relationship between risk taking and remuneration structures. For instance, Cole et al. (2015) document a positive relationship between performance compensation and risk taking for loan officers at U.S. commercial banks.

Agarwal and Ben-David (2018) document that rewarding loan officers for originating loan volume led to a considerable increase in the amount of loans made and nearly a quarter increase in default rates, although formally there was no change in the observable characteristics of loans approved. Agarwal and Ben-David (2018) argue that loan officers incentivised to increase the number of loans overlooked important soft information about the quality of these loans. Acharya et al. (2013) adds to the debate by showing that peer group performance incentives, not institutional incentives, are most to blame for higher risk taking in U.S. banks.

Although the majority of papers on this topic are devoted to the U.S. banking sector, this should not be taken as an indication that risk taking behaviour induced remuneration is an American phenomenon. Efung et al. (2015) document the positive relationship between remuneration and risk taking in Austrian, German, and Swiss banks. Non-executive employees, who were the focus of the study, were rewarded by bonuses for their good performance. Efung et al. (2015) show that pay incentives correlate positively with both the level and volatility of trading profits. To capture the ‘bonus culture’ of banks and to infer the causal relationship from incentives to risk taking, they use the ratios of average bonuses to total remuneration paid in segments of bank that are unrelated to the capital market activity as instruments.

Axelsson and Bond (2015) analyse the impact of moral hazard on remuneration and the effectiveness of remuneration in the financial sector. Given that moral hazard is particularly strong in the financial sector, and that working in the non-financial sector can be perceived as an available default option for financial sector workers in good economic times, then a combination of low effort and large bonuses within the financial sector can be seen as an equilibrium response to good economic conditions. Axelsson and Bond (2015) conclude that such an equilibrium arises because financial sector workers face low consequences for reckless



behaviour when the economy and financial markets are doing well, since they may feel confident to “land on their feet” regardless of the outcome of their actions.

Finally, Allen and Thompson (2019) ask the question why firms pay variable pay, making an important point that variable pay is not necessarily just an incentive. They argue that using variable pay may be endogenous to firms’ capital structures, with firms choosing more variable pay and leverage if workers face a low probability of job termination. They find support for their model using data on Canadian brokers and dealers.

## **5. Shortcomings of the current research and potential development paths**

In short, the literature documents that there is a clear link between remuneration structures and risk-taking behaviour, that alignment of remuneration with shareholders’ interest results in higher risk taking, and that a reduction of this alignment reduces risk taking. Yet, we are still far from understanding and solving the issues that can arise from using remuneration as a mechanism to reduce risk taking.

Striking the right balance between inducing an appropriate level of effort while restricting excessive risk taking is a difficult task. This is further magnified in the banking sector due to the sectors’ complexity, size, and its cross-border organisational and operational structures. In addition, the requirement to create a regulatory regime that will be simple enough to implement effectively yet rich enough to accommodate differences within and across institutions, as well as the specifics of individual countries, makes the undertaking particularly problematic. Moreover, the regulatory changes must target remuneration in a holistic way, i.e. affect its various components, as well as factors that stretch beyond remuneration.

Narrowly focused regulatory changes can be easily offset. For instance, von Ehrlich and Radulescu (2017) show that the bonus tax introduced by the UK financial regulator in 2009 had a significant impact on the structure of remuneration. As intended, the introduction of

bonus tax decreased the size of bonuses (by 40%). However, other remuneration components increased, resulting in no reduction in risk taking – the ultimate purpose of the regulatory change.

The regulatory restrictions on remuneration introduced by CRD IV, i.e. restrictions on the size of variable bonuses, components of variable bonuses, and specifics of M&Cs, find at best only partial support in their effectiveness as tools to reduce risk taking behaviour from the academic literature. While in theory the CRD IV restrictions should be associated with some form of risk taking reduction, it is not clear at all that they have achieved what they were designed to do, nor that their side effects are not bigger than the benefits they have delivered (if any).

There are only a handful of academic studies that assess the effectiveness of the CRD IV restrictions, and these seem quite narrowly focused. For instance, Kleymenova and Tuna (2016) argue that the introduction of the bonus cap in the EU was met with a negative market reaction.

Although there are numerous studies discussing theoretical effects of capping bonuses and imposing M&Cs, they have limited relevance when trying to assess the contribution of the restrictions to any reduction in risk taking in the real world. This is because theoretical models use many simplifying assumptions in order to make them mathematically tractable, and as a result, tend to focus on specific aspects of the problem rather than provide a holistic assessment. One of the most obvious limitations of the existing studies is that they study remuneration issues separately from the perspective of executives or non-executive MRTs, not jointly.

Although the remuneration/risk taking relationships faced by the two groups have some similarities, it is unlikely that they are identical. This is because the remuneration structures and the career incentives and opportunities of the two groups are very different, with younger and less experienced individuals being allocated higher risk tasks (e.g. Axelson and Bond,

2015). Cohn et al. (2017) also argue that more ‘senior’ positions are associated with lower risk-taking attitudes. Cohn et al. (2017) conclude that risk-taking behaviour is not induced by occupational norms in the banking industry; individuals with more salient professional identities are inclined to take less rather than more risk. Moreover, Cohn et al. (2014) show that raising someone’s occupational identity increases their propensity to cheat. Putting these two findings together, one could be tempted to draw the conclusion that individuals are more driven by the desire to achieve personal goals than to follow occupational norms. If so, establishing ethical norms and appropriate incentives may be even more important than is commonly recognised, suggesting more research in this direction is required.

The existence of hierarchical structures limits the generality of some findings. To illustrate the issue let us return to Thanassoulis and Tanaka (2018). Applying M&C to bank employees, whether they are top executives or non-executives, may indeed impact on reducing their individual risk-taking appetites. However, it may also create unexpected side effects. If part of remuneration is to be ‘suspended’ for a few years and can only be received if an individual stays in their position when the M&C restriction expires, it may result in lower rank employees being excessively compliant to ensure that they stay in their job long enough to receive their remuneration. In turn, this submissive behaviour of lower rank MRTs may result in excessive risk taking (especially if a higher proportion of remuneration is equity linked after the introduction of the CRD IV than it was before). Thus, M&C may have a positive impact on risk taking rather than reduce it.

Hence, to better understand the impact of the remuneration directives, it is important to assess them as a ‘package’ rather than as individual rules. In particular, given that individuals respond differently to remuneration incentives depending on whether they are set in relation to the performance of their peers or not (Harris et al., 2017; DeYoung et al. 2019), it is important to study remuneration incentives in a group context. This is further highlighted by DeYoung et

al. (2019), who argue that a larger gap between a CEOs' remuneration and the remuneration of their executive colleagues is associated with lower risk taking and better performance of U.S. banks. While the finding of lower risk taking may be a bit of a surprise, the evidence of the positive relationship between a pay gap and performance is consistent with the U.S. tournament literature in non-financial institutions (e.g. Kale et al., 2009; Rankin and Sayre, 2011). However, given that there is evidence that the positive pay gap and performance relationship is not universal (e.g. Ang et al. 1998; Zalewska, 2014), the question arises whether DeYoung et al. (2019) are a U.S. phenomenon, or whether they are universal, or in fact whether they are banking sector specific rather than national culture specific.

Albuquerque et al.'s (2019) model indicates that this propensity to set peer-related remuneration to increase systemic risk is a banking-specific feature. They argue that shareholders are very effective in undoing regulatory intended effects designed to reduce risk taking.

Another difficulty in assessing the impact of individual remuneration restrictions on risk-taking behaviour arises because restrictions on bonuses or M&Cs do not occur on their own. In real life, they are 'married' with other regulatory requirements. Therefore, to understand whether, and if so how, regulation of remuneration works, the effect of other regulatory requirements should be accounted for when assessing the impact of various structures of remuneration. This is however easier said than done. It would be nonetheless highly desirable to develop theoretical and empirical research that would fill this gap in the literature.

In addition to these strands of the literature, there is also an urgent and growing need to push the remuneration research in the direction of trying to understand the impact of remuneration and its regulation on the development of fintech and sustainable finance/banking.

### 5.1. Fintech

In addition to ‘traditional’ risks, a whole new range of risky practices and risk exposures have emerged in the last decade, which have neither been accounted for nor dealt with in the existing regulation. The technological innovations that are sweeping through the traditional banking industry are affecting how traditional services operate, which new services emerge, and unavoidably, the impact on risk taking behaviour and risk profiles.

The development of peer-to-peer lending (P2P) around the world is a clear example of how lack of appropriate regulation can destabilise financial markets. China is a good example. China is typically thought of as having an interventionist political and economic system. Indeed, the traditional banking industry is under the tight scrutiny of the State Council of the People's Republic of China through its legislative arms of the People's Bank of China and of the China Banking Regulatory Commission up to 2018, and the China Banking and Insurance Regulatory Commission since 2018. In contrast to the tightly controlled banking sector, a practically unregulated P2P market emerged within just a few years, which at its peak in 2016 amounted to \$169.0 billion. In comparison, the two largest P2P markets in developed economies, the U.S. and the UK had \$32.4 billion and \$6.1 billion of assets respectively (Rau, 2019). However, the lack of regulation that undoubtedly contributed to the growth of the Chinese P2P market also led to its decline. It is unclear how many P2P platforms were Ponzi-like schemes, and how many were created under an honest desire to provide funding and investment opportunities. Yet when public trust started to decline, many irregularities surfaced leading to a mass exodus of the schemes from the market.

UK P2P platforms are better regulated, in comparison with China, as they fall under the regulation of the Financial Conduct Authority (FCA). It is however unclear whether existing regulation is appropriate for the needs and specifics of the P2P industry, and of the broader Fintech credit industry. One solution could be for P2P lenders to be regulated under ‘more

bank-like' regulation, or to even become fully fledged banks and hence fall under full banking regulations. An example of the latter is Zopa in the UK. Zopa claims to be the oldest P2P lender in the world, and has recently become a bank in the UK, bringing it under the regulation of the Bank of England's Prudential Regulation Authority.

P2P lenders, and similar fintech companies, would likely face significant governance and remuneration problems if they were to become subject to more bank-like regulation, or full bank regulation. One such issue is dual class stock structures which are popular with tech companies around the world. An advantage of the dual class structure is that it allows the original entrepreneurs to retain control, whilst at the same time easing the path to bring in external funds to generate growth and to implement equity-based remuneration to incentivise non-founder management. However, one of the core features of banking regulation is the requirement to hold capital, which is typically based around common equity tiers (e.g. CET1). Introducing more bank-like regulation to the sector, or a lender choosing to register as a bank, may impose significant constraints on the business model of P2P and other fintech companies. Raising equity or paying equity-based remuneration to non-founders under a single equity class may appear more expensive to founders (reducing ability to grow), or at least may require a restructuring of the equity structure.

A second issue is that banking regulation imposes restrictions on governance. For instance, the banking regulatory requirements for board appointments (designed to ensure a board has the ability to govern key functions) require that a bank's senior responsibility map covers the prescribed responsibilities. An issue with many fintech companies their belief that the core risks affecting their ability to grow the business, as well as their business safety and soundness, are far more skewed to the technological aspects of the business. Hence, a primary concern of these companies is to ensure there is sufficient competence on the board to govern the technological issues. It is claimed by these companies that the series of prescribed

responsibilities, and the board approval processes are overly focused on the traditional non-fintech banking model. Covering both the technological and financial requirements sufficiently would require the fintech companies to have overly large and unwieldy boards. Some fintech companies argue that they are faced with a problem of balancing core skills across board members and senior management, which in turn impinges on the balance of power, remuneration, and the level of risk in the business.

A variant of this problem arises because of the training that non-executive board members are frequently requested to do to meet prudential requirements. This is particularly a problem for fintech companies because the non-executives that have sufficient free time to devote to these activities are typically those that have retired from an executive role. Given the pace of development of fintech, these people are usually older and have limited experience of fintech issues. Thus again, there is a potential disconnect between the board and the core concerns of the business. Disconnected boards may lead to inappropriate structure of remuneration incentives. If remuneration incentives are such that they do not reduce risk taking, there may be a greater need for other regulatory mechanisms to be more effective in reducing risk taking. There is, however, no guarantee that the existing regulatory tools are, or will be, strong enough to stabilise the banking sector when traditional banking is enhanced by fintech innovations.

Eccles et al. (2020) shed some light on a potential issue regarding the effectiveness of capital requirements when some banks innovate and compete for depositors. If the market has some active depositors who take advantage of financial innovation (such as open banking) and search for better deposit opportunities than offered by ‘traditional’ banks, then some banks will innovate to attract these investors. However, competition for these active investors will raise the deposit rates offered to them, which in turn will incentivise the innovating banks to increase risk. As a result of losing depositors, some ‘traditional’ banks may respond by also switching

from their traditional role towards the innovative and competitive market, increasing their deposit rates and consequently taking more risk. Any increase in capital requirements imposed on these innovative and competitive banks will be passed through to depositors because of the competitive mechanism, and hence have less impact on risk taking of the competitive banks. Thus, although higher capital requirements have a ‘cooling down’ effect on risk taking in traditional banking, they may not have the same impact in the fintech world. If the impact of capital requirements on risk taking weakens, this suggests that the role of other policies designed to reduce risk taking may have to be enhanced, including the role of remuneration.

## 5.2. Sustainable banking

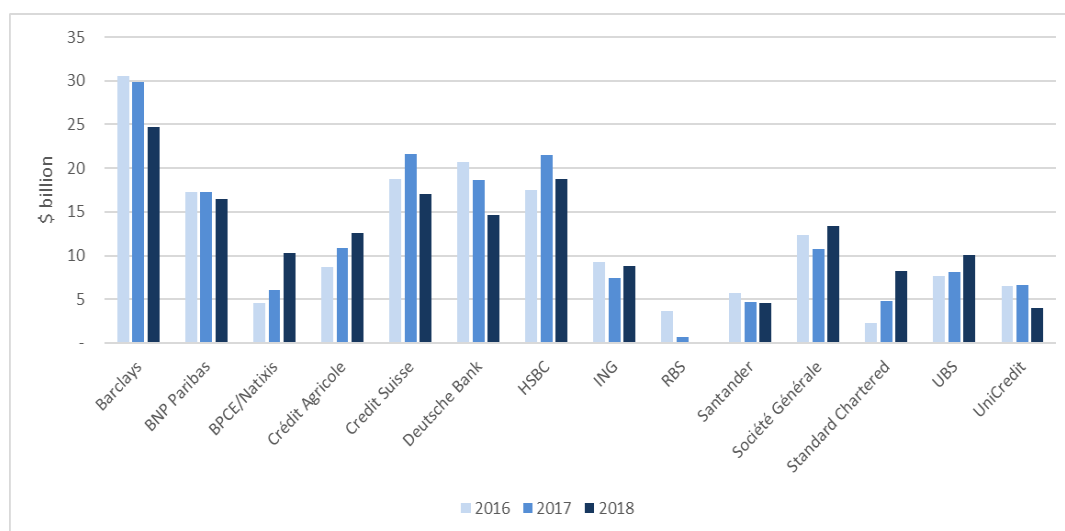
The impact of climate change risk has been studied in the finance literature from several perspectives, e.g. from the perspective of its impact on asset pricing and cost of capital (e.g. Balvers et al. 2017; Donadelli et al., 2019; Hong et al., 2019; Karydas and Xepapadeas, 2019; Zerbib, 2019; Baldauf et al., 2020; Choi et al., 2020), changes in insurance risk (Collier et al, 2009), asset allocation and strategies (e.g. Dessaint and Matray, 2017; Baker et al., 2018; Krueger et al. 2020), policies of central banks and stability of the financial sector as such (e.g. Batten et al. 2016, Nieto, 2017). Yet, very little has been done to understand what drives the propensity to change and adopt new strategies, or new ways of investing in banks, and in particular whether the current structures of remuneration provide appropriate incentives to support green initiatives, decarbonisation, or other socially responsible initiatives.

So far there are powerful statements from many central banks which argue that the transformation to carbon-neutral economies is a must and should not be delayed. According to the Financial Times “Central Banks have a responsibility to make the financial institutions they supervise treat these [climate change related] risks as rigorously as any other” (Financial Times, “Central banks’ mandates allow them to tackle climate change”, 11 November 2019).



Yet, there seems to be little evidence that individual banks have taken a lead in the process, or even follow the lead (e.g. Financial Times, “Banks fail to stop financing fossil fuel industry”, 9 November 2019). JP Morgan Chase spent \$63.9 billion on fossil fuel financing in 2018 alone, and \$195.66 billion in 2016–2018.<sup>17</sup> European banks do not have a great record either. Figure 5 shows that fossil fuel financing does not appear to be a business in decline. The selected European banks spent a total of \$497.8 billion supporting fossil fuel investments between 2016–2018.

Figure 5. Annual spending on fossil fuel financing for selected European banks.



Source: <https://www.ran.org/bankingonclimatechange2019/#data-panel>

(RBS statistics for 2018 are not available)

The EBA issued the “EBA action plan on sustainable finance” in December 2019, which outlines their “plans on deliverables and activities related to environmental, social, and governance (ESG) factors and ESG risk”. The document recognises that “executive remuneration, plays a fundamental role in ensuring the inclusion of social and environmental

<sup>17</sup> <https://www.ran.org/bankingonclimatechange2019/#data-panel>

considerations in the decision-making process” (EBA, 2019b; p. 4), but does not provide any indication what this may mean in practice.

We must ask – is it important to set ESG-benchmark compensation, and if so, how should this be done to induce the desired effects without also inducing undesirable side effects? How can we combine these ESG targets with risk taking restrictions?

The non-banking literature suggests that compensation that is linked to corporate social responsibility metrics enhances firm value (e.g. Maas, 2018, Ikram et al., 2019), and that objective metrics are more effective than subjective ones (Ikram et al., 2019). It is also recognised in the literature that executives display a strong propensity to maintain the *status quo* rather than choose more value enhancing projects that require strategic change in organizations (e.g. McClelland et al., 2010). There is no reason to assume that these effects would be absent or reversed if tested on banking executives. It is however unclear who these ‘angels of change’ might be, or how to get the best of them, given that risk taking in banking is not restricted to executives, that risk-aversion in a banking environment is negatively associated with rank, and given that the pressure to opt for more risky undertakings may be more bottom-to-top rather than top-to-bottom.

Obviously, whether the implementation of new green policies or sticking to the old ways and networks (i.e. supporting fossil fuel investments) is the more risky strategy may well depend on the ability of bankers to detect, select and support the ‘right’ green initiatives.<sup>18</sup> This, in turn may be a question of hands-on experience. However, in contrast to fintech (where many startups are run by young people with strong technical abilities), the attitudes of young bankers

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<sup>18</sup> Islam and Zein (2020) show that in high-tech industry having a CEO who has investor skills and experience matters for the number and quality of patents as well as a greater innovation efficiency. Hands-on experience matters an inventor CEO’s superior ability to evaluate, select, and execute innovative investment projects related to their own hands-on experience. Extending this observation to green initiatives indicates that a considerable change will need to take place in running and governing the banking industry.

to green initiatives are more likely to be based on their personal preferences than on their prior experience (which is likely to be rather limited in this area). There is also a big difference between fintech initiatives and green initiatives, both in their size and consequence of failure. While it might be expected that many fintech unicorns will collapse, and that hardly any of them will be profitable, climate change initiatives cannot afford to go through a long and costly period of trials. Climate change needs to be tackled right now, and this needs to be done effectively and at reasonably low costs. That is, the banking sector needs to select and support projects that will make a true environmental difference as soon as possible, without endangering the stability of the banking system, at either individual country or global level.

Therefore, the following questions arise: (i) how to structure the remuneration of MRTs at different levels (not just of the executives) that will promote the change, (ii) how do these remuneration structures coexist with the desire to restrict risk taking, and (iii) whether and how the current regulatory regime would need to change to accommodate ESG objectives?

## References

- Acharya, V., Litov, LP., and Sepe, SM., 2013. Non-executive incentives and bank risk taking. WP. <https://pdfs.semanticscholar.org/e39c/e20e4e90e514937e70a1708944320648deb6.pdf>
- Acharya, V., Pagano, M., and Volpin, P., 2016. Seeking alpha: Excess risk taking and competition for managerial talent. *Review of Financial Studies* 29(10): 2565–2599.
- Adams, RB., 2012. Governance and the financial crisis. *International Review of Finance* 12(1): 7–38.
- Agarwal, S., and Ben-David, I., 2018. Loan prospecting and the loss of soft information. *Journal of Financial Economics* 129(3): 608–828.
- Albuquerque, R., Cabral, L., and Guedes, J., 2019. Incentive pay and systemic risk. *Review of Financial Studies* 32(11): 4304–4342.
- Allen, J., and Thompson, J.R. 2019. Variable pay: Is it for the worker or the firm? *Journal of Corporate Finance* 58: 551–567.

- Ang, J.S., Hauser, A., and Lauterbach, B., 1998. Contestability and pay differential in the executive suits. *European Financial Management* 4(3): 335–360.
- Axelson, U., and Bond, P., 2015. Wall street occupations. *Journal of Finance* 70(5): 1949–1996.
- Baker, M., Bergstresser, D., Serafeim, G., and Wurgler, J., 2018. Financing the response to climate change: The pricing and ownership of U.S. green bonds. NBER WP 25194.
- Balachandran, S., Kogut, B., and Hitesh, H. (2011) The probability of default, excessive risk, and executive compensation: as study of financial services firms from 1995 to 2008. Columbia School DP.
- Baldauf, M., Garlappi L., and Yannelis, C., 2020. Does climate change affect real estate prices? Only if you believe in it. *Review of Financial Studies* 33(3): 1256–1295.
- Balvers, R., Du, D., and Zhao, X., 2017. Temperature shocks and the cost of equity capital: Implications for climate change perceptions. *Journal of Banking & Finance* 77: 18–34.
- Bannier, C.E., Feess, E., and Packham, N. 2013. Competition, bonuses, and risk taking in the banking industry. *Review of Finance* 17(2): 653–690.
- Batten, S., Sowerbutts, R., and Tanaka, M., 2016. Let's Talk About the Weather: The Impact of Climate Change on Central Banks. Bank of England Working Paper No. 603, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2783753](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2783753)
- Bell, B., and Van Reenen, J., 2014. Bankers and their bonuses. *Economic Journal* 124: F1–F22.
- Bennett, R.L., Güntay, L., and Unal, H., 2015. Inside debt, bank default risk, and performance during the crisis. *Journal of Financial Intermediation* 24(4): 487–513.
- Black, L.K. and Hazelwood, L.N., 2013. The effect of TARP on bank risk taking. *Journal of Financial Stability* 9(4): 790–803.
- Bolton, P., Mehran, H., and Shapiro, J., 2015. Executive compensation and risk taking. *Review of Finance* 19(6): 2139–2181.
- Boyallian, P., and Ruiz–Verdú, P., 2018. Leverage, CEO risk taking incentives, and bank failure during the 2007–10 financial crisis. *Review of Finance* 22(5): 1763–1805.

- Brown, K., Jha, R., and Pacharn, P., 2015. Ex ante CEO severance pay and risk taking in the financial services sector. *Journal of Banking & Finance* 59: 111–126.
- Célérier, C., and Vallée, B., 2019. Returns to talent and the finance wage premium. *Review of Financial Studies* 32(10): 4005–4040.
- Cerasi, V., Deininger, S.M., Gambacorta, L., and Oliviero, T. 2020. How post–crisis regulation has affected bank CEO compensation. *Journal of International Money and Finance* 104
- Cheng, IH., Hong, H., and Scheinkman, J.A., 2015. Yesterday's heroes: compensation and risk at financial firms. *Journal of Finance* 70(2): 839–879.
- Choi, D., Gao, Z., and Jiang, W., 2020. Attention to global warming. *Review of Financial Studies* 33(3): 1112–1145.
- Coates, JM., and Herbert, J., 2008. Endogenous steroids and financial risk taking on a London trading floor, *Proceedings of the National Academy of Sciences of the United States of America* 105: 6167–6172.
- Cohn, A., Fehr, E., and Maréchal, MA., 2014. Business culture and dishonesty in the banking industry. *Nature* 516: 86–89.
- Cohn, A., Fehr, E., and Maréchal, MA., 2017. Do professional norms in the banking industry favour risk taking? *Review of Financial Studies* 30(11): 3801–3823.
- Cole, S., Kanz, M., and Klapper, L., 2015. Incentivizing Calculated Risk-Taking: Evidence from an Experiment with Commercial Bank Loan Officers. *Journal of Finance* 2(70): 537–575.
- Collier, B., Skees, J., and Barnett, B. 2009. Weather Index Insurance and Climate Change: Opportunities and Challenges in Lower Income Countries, *The Geneva Papers on Risk and Insurance – Issues and Practice* 34: 401–424.
- Dessaint, O., and Matray, A., 2017. Do managers overreact to salient risks? Evidence from hurricane strikes. *Journal of Financial Economics* 126: 97–121.
- DeYoung, R., Peng, E., and Yan, M., 2013. Executive compensation and business policy choices at U.S. commercial banks. *Journal of Financial and Quantitative Analysis* 48: 165–196.

DeYoung R., Haq, M., Morgan, J., and Pathan, S., 2019. CEO pay gap and bank risk taking, [SSRN WPhttps://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3491344](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3491344)

Donadelli M., Jüppner, M., Paradiso, A., and Schlag, C., 2019. Temperature volatility risk. University Ca' Foscari of Venice, Dept. of Economics Research Paper Series No. No. 05/WP/2019

Duchin, R., and Sosyura, D., 2014. Safer ratios, riskier portfolios: banks' response to government aid. *Journal of Financial Economics* 113(1): 1–28.

Eccles, P., Grout, P., Siciliani, P., and Zalewska, A., 2020. Open banking and capital requirements, Bank of England, mimeo.

Edmans, A., and Liu, Q., 2011. Inside debt. *Review of Financial Studies* 15: 75–102.

Efing M., Hau, H, Kampkötter, P., and Steinbrecher, J., 2015. Inceptive pay and bank risk taking: Evidence from Austrian, German, and Swiss banks. *Journal of International Economics* 96(1): S123–S140.

Eufinger, C., and Gill, A., 2017. Incentive-based capital requirements. *Management Science* 63(12): 4101–4113.

European Banking Authority (EBA), 2014. EBA report: Benchmarking of remuneration practices at Union level.

European Banking Authority (EBA), 2015a, Report on investment firms. Response to the Commission's call for advice of December 2014. EBA/Op/2015/20

European Banking Authority (EBA), 2015b. EBA report: EBA report: Benchmarking of remuneration practices at Union level and data on high earners.

European Banking Authority (EBA), 2016a, Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures. European Commission 2016/0364(COD)

European Banking Authority (EBA), 2016b. EBA report: Benchmarking of remuneration practices at the European Union level and data on high earners (Data as of end 2014). EBA–OP–2016–05.

European Banking Authority (EBA), 2019a. EBA report on high earners: Data as of end 2017. London – 11/03/2019

European Banking Authority (EBA), 2019b. EBA action plan on sustainable finance. [https://eba.europa.eu/sites/default/documents/files/document\\_library//EBA%20Action%20plan%20on%20sustainable%20finance.pdf](https://eba.europa.eu/sites/default/documents/files/document_library//EBA%20Action%20plan%20on%20sustainable%20finance.pdf)

European Securities and Market Authority (ESMA), 2016, Proportionality principle and remuneration rules in the financial sector, Letter to the European Commission, and the European Parliament from the European Securities and market Authority. [https://www.esma.europa.eu/sites/default/files/library/2016-412\\_letter\\_to\\_european\\_commission\\_european\\_council\\_and\\_european\\_parliament\\_on\\_the\\_proportionality\\_principle\\_and\\_remuneration\\_rules\\_in\\_the\\_financial\\_sector.pdf](https://www.esma.europa.eu/sites/default/files/library/2016-412_letter_to_european_commission_european_council_and_european_parliament_on_the_proportionality_principle_and_remuneration_rules_in_the_financial_sector.pdf)

Financial Conduct Authority (FCA), 2016. Remuneration in CRD IV firms: new guidance and changes to Handbook. Financial Conduct Authority Consultation Paper CP16/28.

Fritz–Morgenthal, S., Hellmuth, J., and Packham, N., 2016. Does risk culture matter? The relationship between risk culture indicators and stress test results. *Journal of Risk Management and Financial Institutions* 9(1): 71–84.

Gande, A. and Kalpathy, S., 2017. CEO compensation and risk taking at financial firms: Evidence from US federal loan assistance. *Journal of Corporate Finance* 47: 131–150.

Globe, V., and Lowery, R., 2016. Compensating financial experts. *The Journal of Finance* 71(6): 2781–2808.

Grout, PA. and Zalewska, A., 2012. The effect of option granting on executive stock purchases, *Economics Letters* 114: 12-15.

Hakenes, H., and Schabel, I., 2014. Bank bonuses and bailouts. *Journal of Money, Credit and Banking* 46(s1): 259–288.

Harris, Q., Mercieca, A., Soane, E., and Tanaka, M., 2017. How do bonus cap and clawback affect risk and effort choice?: Insight from a lab experiment. Bank of England Working Paper.

Hryckiewicz, A., 2014. What do we know about the impact of government interventions in the banking sector? An assessment of various bailout programs on bank behavior. *Journal of Banking & Finance* 46: 246–265.

- Hong, H., Li, F.W., Xu, J., 2019. Climate risks and market efficiency. *Journal of Econometrics* 208(1): 265–281.
- Ikram, A., Li, Z., and Minor, D., 2019. CSR–contingent executive compensation contracts. *Journal of Banking & Finance* (article in press) <https://doi.org/10.1016/j.jbankfin.2019.105655>
- Ilić, D., Pisarov, S., and Schmidt, P.S., 2019. Preaching water but drinking wine? Relative performance evaluation in International Banking. *Swiss Journal of Economics and Statistics* 155: 6, <https://doi.org/10.1186/s41937-019-0032-8>
- Islam, E., and Zein, J., 2020. Investor CEOs. *Journal of Financial Economics* 135: 505–527.
- Johnston, A., 2014. Preventing the next financial crisis? Regulating bankers’ pay in Europe. *Journal of Law and Society* 41(1): 6 – 27.
- Kale, J., Reis, E., and Venkateswaran, A., 2009. Rank order tournament and incentive alignment: The effect on firm performance. *Journal of Finance* 64: 1479–1512.
- Karydas, C., and Xepapadeas, A., 2019. Pricing Climate Change Risks: CAPM with Rare Disasters and Stochastic Probabilities, CER–ETH Working Paper 19/311. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3324499](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3324499)
- Kleymentova, A., Tuna, I. 2016. Regulation of compensation. Chicago Booth School Working Paper No.16–07.
- Kolasinski, A.C., and Yang, N., 2018. Managerial myopia and the mortgage meltdown. *Journal of Financial Economics* 128(3): 466–485.
- Kolm, J., Laux, C., and Lóránth, G., 2016. Bank regulation, CEO compensation, and boards. *Review of Finance* 21(5): 1901–1932.
- Krueger, P., Sautner, Z., and Startks, L.T., 2020. The importance of climate risk for institutional investors. *Review of Financial Studies* 33(3): 1067–1111.
- McClelland, P.L., Liang, X., and Barker III, V.L., 2010. CEO Commitment to the Status Quo: Replication and Extension Using Content Analysis. *Journal of Management* 36(5): 1251-1277.
- Maas, K., 2018. Do corporate social performance targets in executive compensation contribute to corporate social performance. *Journal of Business Ethics* 148: 573–585.



- Murphy, KJ., 2013. Regulating banking bonuses in the European Union: a case study in unintended consequences. *European Financial Management* 19(4): 631–657.
- Nieto, M., 2017. Banks and Environmental Sustainability: Some Financial Stability Reflections. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3082107](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3082107)
- Onali, E., Galiakhmetova, R., Molyneux, P., and Torluccio, G., 2016. CEO power, government monitoring, and bank dividends, *Journal of Financial Intermediation* 27: 89–117.
- Philippon, T., and Reshef, A., 2012. Wages and human capital in the U.S. financial industry: 1909–2006. *Quarterly Journal of Economics* 127: 1551–1609.
- Rankin, F.W., and Sayre, T.L., 2011. Responses to risk in tournaments, *Accounting Organization & Society* 36, 53–62.
- Rau, R., 2019. Law, trust, and the development of crowdfunding. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2989056](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2989056)
- Sapienza, P., Zingales, L., and Maestripieri, D., 2009. Gender differences in financial risk aversion and career choices are affected by testosterone, *Proceedings of the National Academy of Sciences of the United States of America* 106: 15268–15273.
- Słomka–Gołębiowska A., Urbanek, P., 2016. Corporate boards, large blockholders and executive compensation in banks: Evidence from Poland. *Emerging Markets Review* 28: 203–220.
- Stanton, SJ., Liening, SH., and Schultheiss OC., 2011. Testosterone is positively associated with risk taking in the Iowa Gambling Task. *Hormones and Behavior* 59(2): 252–256.
- Sun, Y., 2018. CEO compensation and mortgage origination in the banking industry. *Corporate Governance: An International Review* 26(4): 273–292.
- Thanassoulis, J., 2012. The case for intervening in bankers' pay. *Journal of Finance* 67(3): 849–895.
- Thanassoulis, J., and Tanaka, M., 2018. Optimal pay regulation for too-big-to-fail banks. *Journal of Financial Intermediation* 33: 83–97.
- Van Bakkum, S., 2016. Inside debt and bank risk. *Journal of Financial and Quantitative Analysis* 51(2): 359–385.

Van Ehrlich, M., and Radulescu, D., 2017. The taxation of bonuses and its effect on executive compensation and risk-taking: Evidence from the UK experience. *Journal of Economics and Management Strategy* 26(3): 712–731.

Winkelvoss, C.M., Amoruso, A.J., and Duchac, J., 2014. Executive remuneration at banks receiving federal assistance under the Trouble Assets Relief Program (TARP). *Journal of Legal, Ethical and Regulatory Issues* 17(2): 37–49.

Zalewska, A., 2014. Gentlemen do not talk about money: The case of British boards. *Journal of Empirical Finance* 27: 40–57.

Zalewska, A., 2016. A new look at regulating bankers' remuneration. *Corporate Governance: An International Review* 24(3): 322–333.

Zerbib, O.D., 2019. The effect of pro–environment preferences on bond prices: Evidence from green bonds. *Journal of Banking & Finance* 98: 39–60.